

What is claimed is:

1. An end effector configured to support a microsample for instrumental analysis, comprising:

a generally planar body; and

5 a cantilever tip extending from the planar body configured to be associated with the microsample.

2. The end effector of claim 1, wherein the planar body is generally disk-shaped.

10 3. The end effector of claim 1, wherein the cantilever tip is pivotal relative to the planar body.

4. The end effector of claim 1, wherein the cantilever tip is pivotal up to about
15 180 degrees with respect to the planar body.

5. The end effector of claim 4, wherein the planar body includes an aperture.

6. The end effector of claim 5, wherein the aperture includes a notch in the
20 planar body.

7. The end effector of claim 5, wherein the end effector is configured such that folding the cantilever tip brings the cantilever tip substantially into alignment with the aperture.

5 8. The end effector of claim 6, wherein the end effector includes an integrated fold line that facilitates pivoting the cantilever tip.

9. The end effector of claim 8, wherein the integrated fold line includes an elongate aperture.

10 10. The end effector of claim 1, wherein the cantilever tip includes a sharp point.

11. The end effector of claim 1 wherein the planar body includes a disk having
15 a diameter of about 3 mm.

12. The end effector of claim 1, wherein the end effector is formed by chemical etching or photoetching.

20 13. The end effector of claim 1, wherein the end effector is formed of a ductile metal.

14. The end effector of claim 1, further comprising a microsample holder configured to reversibly couple to the end effector.

15. The end effector of claim 14, wherein the microsample holder includes a
5 clamp.

16. The end effector of claim 14, further comprising a microsample
manipulator that includes a shaft having a proximal end and a distal end, wherein the
microsample holder is associated with the distal end.
10

17. The end effector of claim 16, wherein the microsample holder is axially
removable from the distal end of the shaft.

18. The end effector of claim 14, wherein the end effector and the
15 microsample holder are configured to permit transmission through an associated
microsample during instrumental analysis.

19. A method of using an end effector having a generally planar body, and a
cantilever tip associated with the planar body; comprising:
20 associating a sample with the cantilever tip;
transporting the end effector to an analytical instrument;
pivoting the cantilever tip; and
analyzing the sample.

20. The method of claim 19, wherein the end effector includes an aperture in the planar body, and pivoting the cantilever tip brings the sample substantially into alignment with the aperture.

5

21. The method of claim 19, wherein the sample is associated with the cantilever tip using a focused ion beam system.

22. The method of claim 19, wherein the sample is analyzed using
10 transmission electron microscopy.